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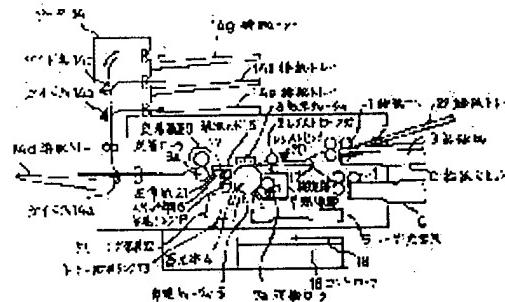
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(54) IMAGE FORMING DEVICE

(57) Abstract:

PURPOSE: To improve the efficiency of work due to a user with a simple configuration by utilizing a scanner part as various detecting means.

CONSTITUTION: A scanner part 16 is arranged on the downstream side of a photosensitive object 4 in the conveying direction of recording paper 3, and a read head 15 of the scanner part 16 scans the recording paper 3 and an original and outputs a read signal to a CPU. Corresponding to the read signal from the read head 15, the CPU designates any one of paper ejection trays 14d, 14e, 14f and 14g corresponding to the result of detecting the recording paper size of the recording paper 3 or a user identification mark for identifying the user or detecting whether the scanned paper is the recording paper 3 or the original.



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CLAIMS

[Claim(s)]

[Claim 1] In the image formation equipment which is equipped with the scanner section which reads the image side of a manuscript, and the sorter style which delivers the recording paper to the delivery location specified out of two or more delivery locations, and conveys the recording paper and a manuscript on the same conveyance way, and forms an image in the recording paper. The projection configuration of the recording paper is made to read by said scanner section at the time of conveyance of the recording paper. Image formation equipment characterized by having the control section which specifies said delivery location to which judges recording paper size with the reading signal from the scanner section, and is made to correspond to said recording paper size, and said sorter style delivers paper.

[Claim 2] The printer section which forms an image in the recording paper, and the scanner section which reads the image side of a manuscript, In the image formation equipment which is equipped with the sorter style which delivers the recording paper to the delivery location specified out of two or more delivery locations, and conveys the recording paper and a manuscript on the same conveyance way. When a user-identification display to prepare said scanner section in the conveyance direction lower stream of a river from said printer section, and for the printer section identify a user on the recording paper moreover is formed, Image formation equipment characterized by having the control section which specifies said delivery location to which is made to read said user-identification display by the scanner section, and identifies a user-identification display with the reading signal from the scanner section, and is made to correspond to a user-identification display, and said sorter style delivers paper.

[Claim 3] The printer section which forms an image in the recording paper, and the scanner section which reads the image side of a manuscript, In the image formation equipment which is equipped with the sorter style which delivers the recording paper or a manuscript to the delivery location specified out of two or more delivery locations, and conveys the recording paper and a manuscript on the same conveyance way. Prepare said scanner section in the conveyance direction upstream from said printer section, and, moreover, the image formation side of the recording paper or the image side of a manuscript is made to read by the scanner section at the time of conveyance of the recording paper or a manuscript. Image formation equipment characterized by having the control section which specifies said delivery location to which identify the recording paper and a manuscript with the reading signal from the scanner section, and the recording paper and a manuscript are made to correspond, respectively, and said sorter style delivers paper.

[Claim 4] The printer section which forms an image in the recording paper, and the scanner section which reads the image side of a manuscript, In the image formation equipment which is equipped with the sorter style which delivers the recording paper or a manuscript to the delivery location specified out of two or more delivery locations, and conveys the recording paper and a manuscript on the same conveyance way. Prepare said scanner section in the conveyance direction upstream from said printer section, and, moreover, the image formation side of the recording paper is made to read by the scanner section at the time of conveyance of the recording paper. Image formation equipment characterized by

having the control section which specifies said delivery location to which judges the existence of an image with the reading signal from the scanner section, and is made to correspond to the existence of the image in said image formation side, and said sorter style delivers paper.

[Claim 5] In the image formation equipment which is equipped with the scanner section which reads the image side of a manuscript, and the sorter style which delivers the recording paper to the delivery location specified out of two or more delivery locations, and conveys the recording paper and a manuscript on the same conveyance way, and forms an image in the recording paper. The projection configuration of the recording paper is made to read by said scanner section at the time of conveyance of the recording paper. Image formation equipment characterized by having the control section which specifies said delivery location to which judges the existence of the lug crease in the recording paper with the reading signal from the scanner section, and is made to correspond to the existence of said lug crease, and said sorter style delivers paper.

[Claim 6] The printer section which forms an image in the recording paper, and the scanner section which reads the image side of a manuscript. In the image formation equipment which is equipped with the sorter style which delivers the recording paper to the delivery location specified out of two or more delivery locations, and conveys the recording paper and a manuscript on the same conveyance way. Make said scanner section approach said printer section, arrange, and, moreover, a record paper end is made to read by the scanner section at the time of the image formation to the recording paper. Image formation equipment characterized by having the control section which specifies said delivery location to which detects the inclination to said conveyance direction of the recording paper with the reading signal from the scanner section, and is made to correspond to the inclination to the conveyance direction of the recording paper, and said sorter style delivers paper.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Industrial Application] This invention relates to image formation equipment equipped with the scanner section which reads a manuscript, the printer section which forms an image in the recording paper, and the sorter style which delivers the recording paper or a manuscript to the delivery location specified out of two or more delivery locations.

[0002]

[Description of the Prior Art] Image formation equipments, such as a printer, are equipped with the printer section, the scanner section, and a sorter style, and there are some which are connected to two or more terminals, such as host equipment and a personal computer, in them. Such image formation equipment is used as an I/O device outputted to the terminal which had the reading signal which read the manuscript and was acquired specified, and is used as a reproducing unit which various kinds of signals inputted from two or more terminals of each are made to correspond, and forms an image in the recording paper, and forms an image in the recording paper with a reading signal.

[0003]

[Problem(s) to be Solved by the Invention] However, there are the following problems in the above-mentioned image formation equipment.

[0004] When two or more recording papers with which sizes differ are delivered to the same delivery location, it is hard to take out the recording paper from a delivery location, and at the time of fetch, it may leave the recording paper to a delivery location, or a user may drop it downward.

[0005] Moreover, when two or more recording papers in which the image was formed by the signal from two or more terminals are delivered to the same delivery location, the user who was operating each terminal has to look for the recording paper in which the image was formed by the signal from its own terminal from two or more recording papers.

[0006] Moreover, when a manuscript and the recording paper are delivered to the same delivery location, a user has to look for a required manuscript or the required recording paper from the sheaf of paper with which a manuscript and the recording paper are intermingled.

[0007] Moreover, if a user loads it with the recording paper accidentally [flesh side / front] to equipment when forming an image in the recording paper with which the image is formed in the rear face, an image which is different on the recording paper will be formed in a duplex.

[0008] Moreover, when the recording paper which the lug crease generated on the recording paper and this lug crease generated in the middle of conveyance, and the normal recording paper are delivered to the same delivery location, discovery of the recording paper which the lug crease generated becomes difficult.

[0009] Moreover, an image is formed in the recording paper which inclined to the conveyance direction, and when this inclined recording paper and the recording paper conveyed by normal are delivered to the same delivery location, discovery of the recording paper with which the location of an image shifted becomes difficult by being inclined and conveyed.

[0010] In the conventional printer, in order to solve various kinds of above-mentioned problems, the detection means with which many became independent is needed, a configuration becomes complicated, and it has become the cause of high cost.

[0011] The purpose of this invention uses the scanner section as various detection means, and is to offer the image formation equipment which can increase the efficiency of the activity by the user with an easy configuration.

[0012]

[Means for Solving the Problem] In order to solve the above-mentioned technical problem, the 1st means of this invention In the image formation equipment which is equipped with the scanner section which reads the image side of a manuscript, and the sorter style which delivers the recording paper to the delivery location specified out of two or more delivery locations, and conveys the recording paper and a manuscript on the same conveyance way, and forms an image in the recording paper It is characterized by having the control section which specifies said delivery location to which is made to read the projection configuration of the recording paper by said scanner section at the time of conveyance of the recording paper, and judges recording paper size with the reading signal from the scanner section, and is made to correspond to said recording paper size, and said sorter style delivers paper.

[0013] Moreover, the printer section in which the 2nd means forms an image in the recording paper and the scanner section which reads the image side of a manuscript, In the image formation equipment which is equipped with the sorter style which delivers the recording paper to the delivery location specified out of two or more delivery locations, and conveys the recording paper and a manuscript on the same conveyance way When a user-identification display to prepare said scanner section in the conveyance direction lower stream of a river from said printer section, and for the printer section identify a user on the recording paper moreover is formed, It is characterized by having the control section which specifies said delivery location to which is made to read said user-identification display by the scanner section, and identifies a user-identification display with the reading signal from the scanner section, and is made to correspond to a user-identification display, and said sorter style delivers paper.

[0014] Moreover, the printer section in which the 3rd means forms an image in the recording paper and the scanner section which reads the image side of a manuscript, In the image formation equipment which is equipped with the sorter style which delivers the recording paper or a manuscript to the delivery location specified out of two or more delivery locations, and conveys the recording paper and a manuscript on the same conveyance way Prepare said scanner section in the conveyance direction upstream from said printer section, and, moreover, the image formation side of the recording paper or the image side of a manuscript is made to read by the scanner section at the time of conveyance of the recording paper or a manuscript. It is characterized by having the control section which specifies said delivery location to which identify the recording paper and a manuscript with the reading signal from the scanner section, and the recording paper and a manuscript are made to correspond, respectively, and said sorter style delivers paper.

[0015] Furthermore, the printer section in which the 4th means forms an image in the recording paper and the scanner section which reads the image side of a manuscript, In the image formation equipment which is equipped with the sorter style which delivers the recording paper or a manuscript to the delivery location specified out of two or more delivery locations, and conveys the recording paper and a manuscript on the same conveyance way Prepare said scanner section in the conveyance direction upstream from said printer section, and, moreover, the image formation side of the recording paper is made to read by the scanner section at the time of conveyance of the recording paper. It is characterized by having the control section which specifies said delivery location to which judges the existence of an image with the reading signal from the scanner section, and is made to correspond to the existence of the image in said image formation side, and said sorter style delivers paper.

[0016] Moreover, the 5th means is equipped with the scanner section which reads the image side of a manuscript, and the sorter style which delivers the recording paper to the delivery location specified out

of two or more delivery locations. In the image formation equipment which conveys the recording paper and a manuscript on the same conveyance way, and forms an image in the recording paper. The projection configuration of the recording paper is made to read by said scanner section at the time of conveyance of the recording paper. It is characterized by having the control section which specifies said delivery location to which judges the existence of the lug crease in the recording paper with the reading signal from the scanner section, and is made to correspond to the existence of said lug crease, and said sorter style delivers paper.

[0017] Moreover, the printer section in which the 6th means forms an image in the recording paper and the scanner section which reads the image side of a manuscript, In the image formation equipment which is equipped with the sorter style which delivers the recording paper to the delivery location specified out of two or more delivery locations, and conveys the recording paper and a manuscript on the same conveyance way. Make said scanner section approach said printer section, arrange, and, moreover, a record paper end is made to read by the scanner section at the time of the image formation to the recording paper. It is characterized by having the control section which specifies said delivery location to which detects the inclination to said conveyance direction of the recording paper with the reading signal from the scanner section, and is made to correspond to the inclination to the conveyance direction of the recording paper, and said sorter style delivers paper.

[0018]

[Function] According to the 1st means of the above, a sorter style delivers the recording paper to the delivery location corresponding to recording paper size by the control section which is made to read the projection configuration of the recording paper by the scanner section at the time of conveyance of the recording paper, and judges recording paper size by the reading signal from the scanner section, and is made to correspond to recording paper size, and specifies a delivery location.

[0019] Moreover, according to the 2nd means, a sorter style delivers the recording paper to the delivery location corresponding to a user-identification display by the control section which is made to read the user-identification display formed in the recording paper of the scanner section prepared in the conveyance direction lower stream of a river from the printer section, and this scanner section, and identifies a user-identification display by the reading signal from the scanner section, and is made to correspond to a user-identification display, and specifies a delivery location.

[0020] Moreover, the scanner section which was prepared in the conveyance direction upstream from the printer section according to the 3rd means, By the control section which make the image formation side of the recording paper, or the image side of a manuscript read by this scanner section, and identify the recording paper and a manuscript by the reading signal from the scanner section, and the recording paper and a manuscript are made to correspond, and specifies a delivery location. A sorter style delivers the recording paper and a manuscript to a delivery location different, respectively.

[0021] Moreover, the scanner section which was prepared in the conveyance direction upstream from the printer section according to the 4th means, By the control section which is made to read the image formation side of the recording paper by this scanner section, and judges the existence of an image by the reading signal from the scanner section, and is made to correspond to the existence of an image, and specifies a delivery location. A sorter style delivers the recording paper with which the image is formed before image formation initiation, and the recording paper with which the image is not formed to a delivery location different, respectively.

[0022] Moreover, according to the 5th means, the recording paper with a lug crease of a sorter style and the recording paper without a lug crease are delivered to a delivery location different, respectively by the control section which is made to read the projection configuration of the recording paper by the scanner section, and judges the existence of the lug crease in the recording paper by the reading signal from the scanner section, and is made to correspond to the existence of a lug crease, and specifies a delivery location.

[0023] Moreover, the scanner section by which contiguity arrangement was carried out at the printer section according to the 6th means, By the control section which is made to read a record paper end by this scanner section, and detects the inclination to the conveyance direction of the recording paper by the

reading signal from this scanner section, and is made to correspond to the inclination of the recording paper, and specifies a delivery location. The recording paper with which the sorter style inclined to the conveyance direction at the time of image formation, and the recording paper which did not incline are delivered to a delivery location different, respectively.

[0024]

[Example] Hereafter, the example of this invention is explained based on a drawing.

[0025] the detail paper 3 which drawing 1 was the outline block diagram of the laser beam printer equipped with the printer section and the scanner section which are the 1st example of this invention, and a sorter, was well-known as for the record process of the printer equipment of an electrophotography method, and was fed to the resist roller pair 2-way by rotation of the feed koro 1 from sheet paper cassette C in the printer section -- a resist roller pair -- timing is taken and it is conveyed by 2 to the drum-like photo conductor 4. The rotation drive of the photo conductor 4 is carried out counterclockwise, in that case, by the electrification charger 5, a front face is charged, the laser beam from the laser beam study system 6 is irradiated, and an electrostatic latent image is formed in a front face.

[0026] Said electrostatic latent image is formed into a visible image with a toner in response to an operation of developing-roller 7a, when it passes along the development section 7, and this visible image is imprinted with the imprint charger 8 by the detail paper 3 conveyed to the photo conductor 4, and it is fixed to the visible image on the imprinted detail paper 3 by the anchorage device 9 which has fixing roller pair 9a.

[0027] On the other hand, the photo conductor 4 after a visible image imprint is removed by cleaning equipment 12 in a residual toner, and, moreover, a charge is removed with the electric discharge lamp P. The toner removed from the photo conductor 4 is held in the toner recovery tank 13, and are collected.

[0028] The recording paper 3 discharged from the anchorage device 9 is conveyed in a sorter 14, and is delivered to either of four paper output trays 14d, 14e, 14f, and 14g which constitute a delivery location through the conveyance way set up by two or more guide pawls 14a, 14b, and 14c, respectively.

[0029] The scanner section 16 equipped with the read head 15 which is the reading means for image information reading which consists of CCD (charge-coupled device) is installed in the record conveyance direction lower stream of a river from said printer section. The manuscript conveyed by the read head 15 is laid in a paper tray 22, and separation feeding is carried out on the same conveyance way 17 as the recording paper 3.

[0030] In addition, the controller by which 18 in drawing outputs various control signals, the printer control section to which 19 controls each part of the laser beam printer of the above-mentioned configuration, and 20 are resist sensors.

[0031] Drawing 2 is the block diagram showing an example of the control system of the laser beam printer of drawing 1, 18 is connected to the external instrument 30 which consisted of two or more terminals, to printer equipment, it is CPU of the microcomputer gestalt which controls printer equipment, and it connects with ROM32 corresponding to each processing means that processing mentioned later should be performed, and the controller which sends out image information and which was mentioned above, and 31 have RAM of a working-level month etc. 33 is the Maine motor drive circuit which drives the Maine motor 34 which performs conveyance of said recording paper 3 and the drive of an anchorage device 9 and the development section 7.

[0032] 39 is a polygon motor drive circuit which drives the polygon motor 40 of the laser beam study system 6, and has the detecting circuit of FG signal for detecting the rotational frequency of the polygon motor 40. The feed clutch drive circuit of the feed clutch 36 which drives the feed koro 1 which 35 feeds with the detail paper 3, 37 -- a resist roller pair -- the resist clutch drive circuit of the resist clutch 38 which drives 2 -- The laser drive circuit which drives laser equipment 41 with the picture signal VIDEO by which 42 is generated from the picture signal WDATA from a controller 18, 44 is the signal-control section write-in [optical] which acquires the horizontal-scanning synchronizing signal LSYNC, the horizontal-scanning write-in effective region signal LGATE, and the vertical-scanning write-in effective region signal FGATE from the synchronous detection signal DETP acquired by the synchronous

detector 43 according to rotation of the polygon motor 40, and is sent out to a controller 18.

[0033] Moreover, laser equipment 41 has the semiconductor laser section which outputs a laser beam according to the drive of the laser drive circuit 42, and the photo detector (not shown) prepared in order to perform the quantity of light adjustment.

[0034] CPU31 and a controller 18 are connected with the bidirectional serial interface which consists of the received-data signal PERXD, the transmit data signal PETXD, a receiving ready signal PEDTR, and a transmitting ready signal PECTS, the condition of the printer equipment which CPU31 judged is sent out to a controller 18, or the instruction with which a controller 18 controls printer equipment is sent.

[0035] In the above-mentioned configuration, CPU31 tells a controller 18 about printer equipment being in the condition which can be record operated. A controller 18 checks that it is in the condition which can be record operated, and sends a record actuation initiation instruction to CPU31. If a record actuation start signal is received, CPU31 will turn ON the polygon motor driving signal PMST that record actuation should be started immediately, and will rotate the polygon motor 40. The rotational frequency of the polygon motor 40 is controlled so that the polygon motor 40 outputs FG pulse of the frequency according to that rotational frequency, and this pulse is detected in FG signal detector, is sent to the polygon motor drive circuit 39 and becomes the same frequency as polygon motor reference clock PMCK. The Main motor driving signal MMST is turned ON, and coincidence is made to rotate the Main motor 34.

[0036] A controller 18 is concerned with record actuation, receives the recording density information inputted in connection with switching of an external instrument or an operator according to the contents of an image that there is nothing, and transmits a recording density assignment instruction to CPU31. In response, CPU31 sends out the revolving-speed-control signal PMCON to the polygon motor drive circuit 39. The revolving-speed-control signal PMCON is a signal which determines polygon motor reference clock PMCK, and is a signal which chooses one as a reference clock from two or more clocks with which are the reference clocks itself or the polygon motor drive circuit 39 is equipped.

[0037] By controlling the current to the polygon motor 40 so that the period of FG pulse is set to fixed level, the polygon motor drive circuit 39 can stabilize rotation of the polygon motor 40. Therefore, after CPU31 receives a recording density assignment instruction, it can be switched by switching the revolving-speed-control signal PMCON according to the recording density which had the rotational frequency of the polygon motor 40 specified.

[0038] Moreover, if the polygon motor 40 reaches the stationary rotational frequency according to recording density, the polygon motor drive circuit 39 turns ON the polygon motor lock signal PMLK, and sends it out to CPU31. the detail paper 3 which turned ON the feed clutch driving signal FDCL, drove said feed koro 1, and was contained by sheet paper cassette C when CPU31 started record actuation -- a resist roller pair -- it is made to convey to the location of 2 And after checking that the polygon motor lock signal PMLK is turned on, the vertical-scanning write-in effective region signal FGATE is sent out to a controller 18. A controller 18 is synchronized with Signal FGATE being turned on, and sends out a picture signal WDATA after predetermined time. CPU31 sends out Signal FGATE, turns ON the resist clutch driving signal RGCL after predetermined time, makes the recording paper 3 convey towards the record location by the photo conductor 4, and makes an image form in the predetermined location of the recording paper.

[0039] CPU31 adjusts laser intensity, when Signal FGATE is OFF. The quantity of light signal fed back from the photo detector of laser equipment 41 is compared with predetermined level by the comparator in the laser drive circuit 42, and is inputted into CPU31 as a signal LDCT made binary. A laser driving signal is changed using digital to analog, laser intensity becomes a predetermined value, and CPU31 holds laser intensity in the place where Signal LDCT changes, and adjusts laser intensity. Moreover, the synchronous detector 43 detects the synchronizing signal of a fixed period according to rotation of the polygon motor 40 by irradiating the mirror on the polygon motor 40 turning around a laser beam.

[0040] The synchronous detection signal DETP inputs the signal-control section 44 write-in [optical], and it generates the image write-in clock WCLK which synchronized with Signal DETP. If Signal WCLK is counted to coincidence and it is reached at the predetermined number of counts, the

horizontal-scanning synchronizing signal LSYNC and the horizontal-scanning write-in effective region signal LGATE will be generated. Moreover, the interior signal FSYNC of a vertical-scanning write-in effective region from CPU31 inputs, it is made to synchronize with Signal LSYNC, and the vertical-scanning write-in effective region signal FGATE is generated. The picture signal WDATA from a controller 18 is synchronized with Signal WCLK at the time of the image writing which Signal LGATE and Signal FGATE turn on, and it incorporates, it changes into the signal VIDEO which drives laser equipment 41, and transmits to the laser drive circuit 42.

[0041] Moreover, a manuscript is read by the read head 15, delivery and CPU31 carry out data processing of the reading signal for a reading signal at CPU31, and the scanner section 16 considers as image data, and memorizes this image data, or sends image data to an external instrument 30 through a controller 18.

[0042] In the 1st example, while the scanner section 16 is arranged in the recording paper conveyance direction on the lower stream of a river of a photo conductor 4 and forming the conveyance way 17 in the opposite location of a read head 15, the orientation plate 21 equipped with the predetermined reflection factor is arranged.

[0043] In the 1st example, CPU31 performs control which the mode selection signal inputted through the controller 18 is made to correspond, and is shown in drawing 4 thru/or drawing 6.

[0044] Drawing 4 is a flow chart which shows control concerning detection of the detail-paper size in the 1st example, and assignment of a paper output tray.

[0045] When CPU31 starts conveyance of the recording paper 3 (S1-1) and this recording paper 3 comes to a reading station, the recording paper 3 is made to scan by the read head 15 (S1-2). CPU31 which received the reading signal from a read head 15 By computing the mileage between services of the recording paper 3 after detecting the location of the both-sides edge of the recording paper 3 and detecting the tip of the recording paper 3 further according to the difference of the reflection factor of an orientation plate 21 and the recording paper 3 until it detects the back end Recording paper size is judged. (S1-3) Next, the delivery tab-control-specification signal corresponding to said recording paper size is outputted to the sorter control circuit 45 (S1-4).

[0046] The sorter control circuit 45 sets up the direction of the guide pawls 14a, 14b, and 14c so that the recording paper 3 may be delivered to the paper output trays 14d, 14e, 14f, and 14g specified by the delivery tab-control-specification signal. Since the recording paper 3 is delivered to the paper output trays 14d, 14e, 14f, and 14g corresponding to recording paper size by this, the recording paper 3 is made to correspond to recording paper size, and can be classified by it.

[0047] Drawing 5 is a flow chart which shows control concerning the discernment of a user in the 1st example, and assignment of a paper output tray.

[0048] The external instrument 30 is constituted so that the picture signal corresponding to the user-identification mark for identifying a user with the usual picture signal can be sent out. When the picture signal corresponding to a user-identification mark inputs, a laser beam printer prints the alphabetic character corresponding to a user individual to the margin field of the recording paper 3.

[0049] An image is formed in the recording paper 3 (S2-1), and CPU31 makes the position in the margin field of the recording paper 3 scan by the read head 15, when this recording paper 3 comes to a reading station (S2-2). When the existence of a user-identification mark is judged (S2-3) and the user-identification mark is printed by the reading signal from a read head 15 (in the case [Step S2 -3] of YES), CPU31 discriminates a user from a user-identification mark (S2-4), and outputs the delivery tab-control-specification signal corresponding to a user to the sorter control circuit 45 (S2-5). Moreover, when the user-identification mark is not printed (in the case [Step S2 -3] of NO), CPU31 outputs the delivery tab-control-specification signal corresponding to the delivery location where paper is delivered to the common recording paper 3 it is not necessary to make a user correspond and to classify to the sorter control circuit 45 (S2-6).

[0050] The sorter control circuit 45 sets up the direction of the guide pawls 14a, 14b, and 14c so that the recording paper 3 with which the user-identification mark was printed may be delivered to three steps of paper output trays 14e, 14f, and 14g when it corresponds to a user, and it sets up the direction of guide

pawl 14a so that the recording paper 3 with which the user-identification mark is not printed may be delivered to 14d of paper output trays of the bottom. Since the recording paper 3 with which the user-identification mark is printed is delivered to the paper output trays 14e, 14f, and 14g corresponding to the class of user-identification mark by this, it is made to correspond to the class of printed user-identification mark, and the recording paper 3 can be classified by it.

[0051] Drawing 6 is a flow chart which shows control concerning detection of a lug crease of the detail paper in the 1st example, and assignment of a paper output tray.

[0052] When CPU31 starts conveyance of the recording paper 3 (S3-1) and this recording paper 3 comes to a reading station, the recording paper 3 is made to scan by the read head 15 (S3-2). CPU31 which received the reading signal from a read head 15 detects the projection configuration near [four] the corner section of the recording paper 3 according to the difference of the reflection factor of an orientation plate 21 and the recording paper 3, and judges whether an interior angle is right-angled in each corner section (S3-3). In one of the corner sections, when an interior angle is not right-angled (in the case [Step S3 -3] of NO), it judges that the lug crease has generated CPU31 on the recording paper 3, and the delivery tab-control-specification signal corresponding to 14d of paper output trays is outputted to the sorter control circuit 45 (S3-4). Moreover, in all the corner sections, when an interior angle is right-angled (in the case [Step S3 -3] of YES), CPU31 outputs the delivery tab-control-specification signal corresponding to paper output trays 14e, 14f, and 14g to the sorter control circuit 45 so that the recording paper 3 may be classified corresponding to recording paper size (S3-5).

[0053] The sorter control circuit 45 sets up the direction of guide pawl 14a so that the recording paper 3 with a lug crease may be delivered to 14d of paper output trays, and it sets up the direction of the guide pawls 14a, 14b, and 14c so that the normal recording paper 3 may be delivered to the paper output trays 14e, 14f, and 14g corresponding to recording paper size. Since the recording paper 3 with a lug crease is delivered to 14d of specific paper output trays by this, the normal recording paper 3 and the recording paper 3 with a lug crease can be classified.

[0054] Drawing 3 is the outline block diagram of the laser beam printer equipped with the printer section and the scanner section which are the 2nd example of this invention, and a sorter, about the member corresponding to the member explained based on drawing 1 and drawing 2, attaches the same sign and omits explanation.

[0055] The laser beam printer of the 2nd example is equipped with the control system of the same configuration as the laser beam printer of the 1st example explained based on drawing 2. Moreover, while the scanner section 16 of the 2nd example is arranged for the upstream of a photo conductor 4 in the recording paper conveyance direction and forming the conveyance way 17 in the opposite location of a read head 15, the orientation plate 21 equipped with the predetermined reflection factor is arranged.

[0056] In the 2nd example, CPU31 performs control which the mode selection signal inputted through the controller 18 is made to correspond, and is shown in drawing 7 thru/or drawing 9.

[0057] Drawing 7 is a flow chart which shows control concerning the discernment from the detail paper and manuscript in the 2nd example, and assignment of a paper output tray.

[0058] In the 2nd example, the recording paper 3 is fed to the printer section also from a paper tray 22 only from sheet paper cassette C. When CPU31 starts conveyance of the recording paper 3 or the manuscript which is the form to which paper was fed from the paper tray 22 (S4 -1) and this recording paper 3 or manuscript comes to a reading station, the recording paper 3 or a manuscript is made to scan by the read head 15 (S4 -2). CPU31 judges the existence of the image in the form which scanned the read head 15 with the reading signal (S4 -3). Judge that the form currently conveyed is a manuscript when the image is formed in the form (in the case [Step S4 -3] of YES), carry out data processing of the aforementioned reading signal, and it considers as image data. This image data is memorized, or it sends out to an external instrument 30 through a controller 18 (S4 -4), and the delivery tab-control-specification signal corresponding to a manuscript is further outputted to the sorter control circuit 45 (S4 -5). Moreover, when the image is not formed in the reading side (in the case [Step S4 -3] of NO), it judges that the form currently conveyed is the recording paper 3, an image is formed in this recording paper 3 (S4 -6), and the delivery tab-control-specification signal corresponding to the recording paper 3

is further outputted to the sorter control circuit 45 (S4 -7).

[0059] The sorter control circuit 45 sets up the direction of the guide pawls 14a, 14b, and 14c so that the form which set up the direction of the guide pawls 14a, 14b, and 14c so that the form judged to be the recording paper 3 might be delivered to the predetermined paper output trays 14d, 14e, 14f, and 14g, and was judged to be a manuscript may be delivered to different predetermined paper output trays 14d, 14e, 14f, and 14g from the recording paper 3. Since the recording paper 3 and a manuscript are delivered to paper output trays 14d, 14e, 14f, and 14g different, respectively by this, the recording paper 3 and a manuscript can be classified.

[0060] Drawing 8 is a flow chart which shows control concerning detection of duplex printing to the detail paper in the 2nd example, and assignment of a paper output tray.

[0061] When CPU31 starts conveyance of the recording paper 3 (S5-1) and this recording paper 3 comes to a reading station, the image formation side of the recording paper 3 is made to scan by the read head 15 (S5-2). CPU31 judges the existence of the image in the image formation side which the read head 15 scanned with the reading signal (S5-3). When the image is not formed in the image formation side of the recording paper 3 (in the case [Step S5 -3] of NO), an image is formed in the recording paper 3 (S5-4), and the delivery tab-control-specification signal corresponding to the further usual recording paper 3 is outputted to the sorter control circuit 45 (S5-5). Moreover, when the image is formed in the image formation side of the recording paper 3 (in the case [Step S5 -3] of YES), an image is formed in the recording paper 3 (S5-6), and the delivery tab-control-specification signal corresponding to the recording paper 3 by which duplex printing was carried out is outputted to the sorter control circuit 45 (S5-7).

[0062] The sorter control circuit 45 sets up the direction of guide pawl 14a so that the recording paper 3 with which the direction of the guide pawls 14a, 14b, and 14c was set up so that the recording paper 3 with which the image was formed normally might be delivered to paper output trays [14e, 14f, and 14g] either, and the image was formed in the same image formation side at the duplex may be delivered to 14d of paper output trays. Since the recording paper 3 with which the recording paper 3 with which the image was formed normally was delivered to paper output trays 14e, 14f, and 14g by this, and duplex printing was carried out is delivered to 14d of paper output trays, the recording paper 3 by which duplex printing was carried out can be classified from the recording paper 3 with which the image was formed normally. Moreover, without performing image formation of step S5-6, it is possible to make it also make the recording paper 3 deliver to 14d of paper output trays, and duplex printing to the recording paper 3 can be prevented in advance in this case.

[0063] Drawing 9 is a flow chart which shows control concerning detection of the inclination of the detail paper in the 2nd example, and assignment of a paper output tray.

[0064] When CPU31 starts conveyance of the recording paper 3 (S6-1) and this recording paper 3 comes to a reading station, the recording paper 3 is made to scan by the read head 15 (S6-2). CPU31 which received the reading signal from a read head 15 detects the location of the side edge of the recording paper 3 which moves in the conveyance direction according to the difference of the reflection factor of an orientation plate 21 and the recording paper 3, and computes the inclination of the recording paper 3 to the conveyance direction with the migration length of the recording paper 3, and the amount of displacement of a side edge. [whether CPU31 is below a permission include angle at which the inclination to the conveyance direction of the recording paper 3 is beforehand set up just before the time of image formation activation, or image formation initiation, and] It judges whether it is larger than a permission include angle (S6-3), and when the inclination of the recording paper 3 is below a permission include angle (in the case [Step S6 -3] of NO), an image is formed in the recording paper 3 (S6-4), and the delivery tab-control-specification signal corresponding to the further usual recording paper 3 is outputted to the sorter control circuit 45 (S6-5). Moreover, an image is formed in the recording paper 3 when the recording paper 3 inclines more greatly than a permission include angle (in the case [Step S6 -3] of YES). (S6-6) The delivery tab-control-specification signal corresponding to the recording paper [location / where the image formation location in the recording paper 3 is still normaler] 3 shifted is outputted to the sorter control circuit 45 (S6-7).

[0065] By setting up the direction of the guide pawls 14a, 14b, and 14c so that the recording paper 3 with which the image was formed in the normal location may be delivered to paper output trays [14e, 14f, and 14g] either, and inclining to the conveyance direction at the time of image formation, the sorter control circuit 45 sets up the direction of guide pawl 14a so that the recording paper 3 with which the formation location of an image shifted may be delivered to 14d of paper output trays. Since the recording paper 3 from which the recording paper 3 with which the image was formed in the normal location was delivered to paper output trays 14e, 14f, and 14g by this, and the formation location of an image shifted by it is delivered to 14d of paper output trays, the recording paper 3 with which the formation location of an image shifted can be classified from the recording paper 3 with which the image was formed in the normal location. Moreover, without performing image formation of step S6-6, it is possible to make it also make the recording paper 3 deliver to 14d of paper output trays, and it can prevent forming the image which shifted from the normal location to the recording paper 3 in this case.

[0066]

[Effect of the Invention] Since according to the 1st means of this invention it is made to correspond to recording paper size and can classify when a sorter style delivers the recording paper to the delivery location corresponding to recording paper size as explained above, it becomes easy for a user to take out the recording paper from a delivery location.

[0067] Moreover, since according to the 2nd means the recording paper is made to correspond to the class of user-identification display and can be classified when a sorter style delivers the recording paper to the delivery location corresponding to a user-identification display, the recording paper which the user made output with the signal from its own terminal can be found easily.

[0068] Moreover, according to the 3rd means, when a sorter style delivers the recording paper and a manuscript to a delivery location different, respectively, the recording paper and a manuscript can be classified.

[0069] Moreover, when a sorter style delivers the recording paper with which the image is formed in the image formation side before image formation initiation, and the recording paper with which the image is not formed to a delivery location different, respectively according to the 4th means Since the recording paper with which the image is formed before image formation initiation, and the recording paper with which the image is not formed can be classified, the recording paper with which the image was normally formed after image formation completion, for example, and the recording paper with which the image was formed in the same image formation side at the duplex can be classified.

[0070] Moreover, since the recording paper which does not have a lug crease by delivering the recording paper without a lug crease of a sorter style and the recording paper with a lug crease to a delivery location different, respectively, and the recording paper with a lug crease can be classified according to the 5th means, a user can find the recording paper with a lug crease certainly.

[0071] Moreover, according to the 6th means, the recording paper with which the image was formed in the normal location, and the recording paper with which the formation location of an image shifted can be classified by delivering the recording paper with which the sorter style inclined to the conveyance direction at the time of image formation, and the recording paper which did not incline to a delivery location different, respectively.

[Translation done.]

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the outline block diagram of the laser beam printer equipped with the printer section and the scanner section which are the 1st example of this invention, and a sorter.

[Drawing 2] It is the block diagram showing an example of the control system of the laser beam printer of drawing 1.

[Drawing 3] It is the outline block diagram of the laser beam printer equipped with the printer section and the scanner section which are the 2nd example of this invention, and a sorter.

[Drawing 4] It is the flow chart which shows control concerning detection of the detail-paper size in the 1st example, and assignment of a paper output tray.

[Drawing 5] It is the flow chart which shows control concerning the discernment of a user in the 1st example, and assignment of a paper output tray.

[Drawing 6] It is the flow chart which shows control concerning detection of a lug crease of the detail paper in the 1st example, and assignment of a paper output tray.

[Drawing 7] It is the flow chart which shows control concerning the discernment from the detail paper and manuscript in the 2nd example, and assignment of a paper output tray.

[Drawing 8] It is the flow chart which shows control concerning detection of duplex printing to the detail paper in the 2nd example, and assignment of a paper output tray.

[Drawing 9] It is the flow chart which shows control concerning detection of the inclination of the detail paper in the 2nd example, and assignment of a paper output tray.

[Description of Notations]

3 [21 -- An orientation plate, 30 / -- External instrument, / 31 -- CPU, 45 / -- Sorter control circuit.] -- Detail paper 18 -- Controller, 4 -- Photo conductor 6 -- Laser beam study system 7 -- Development section 8 -- Imprint charger 14 -- Sorter 14d, 14e, 14f, 14g -- Paper output tray 15 -- Read head 16 -- Scanner section 17 -- Conveyance way

[Translation done.]

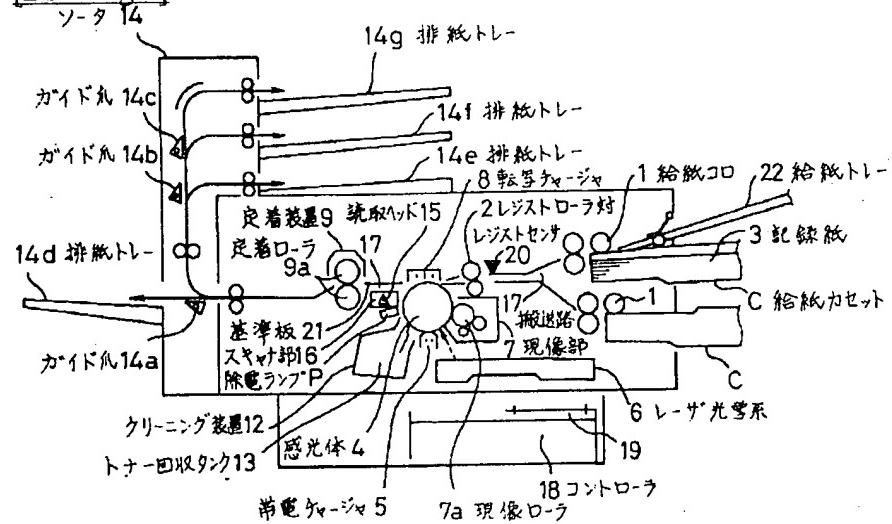
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DRAWINGS

[Drawing 1]

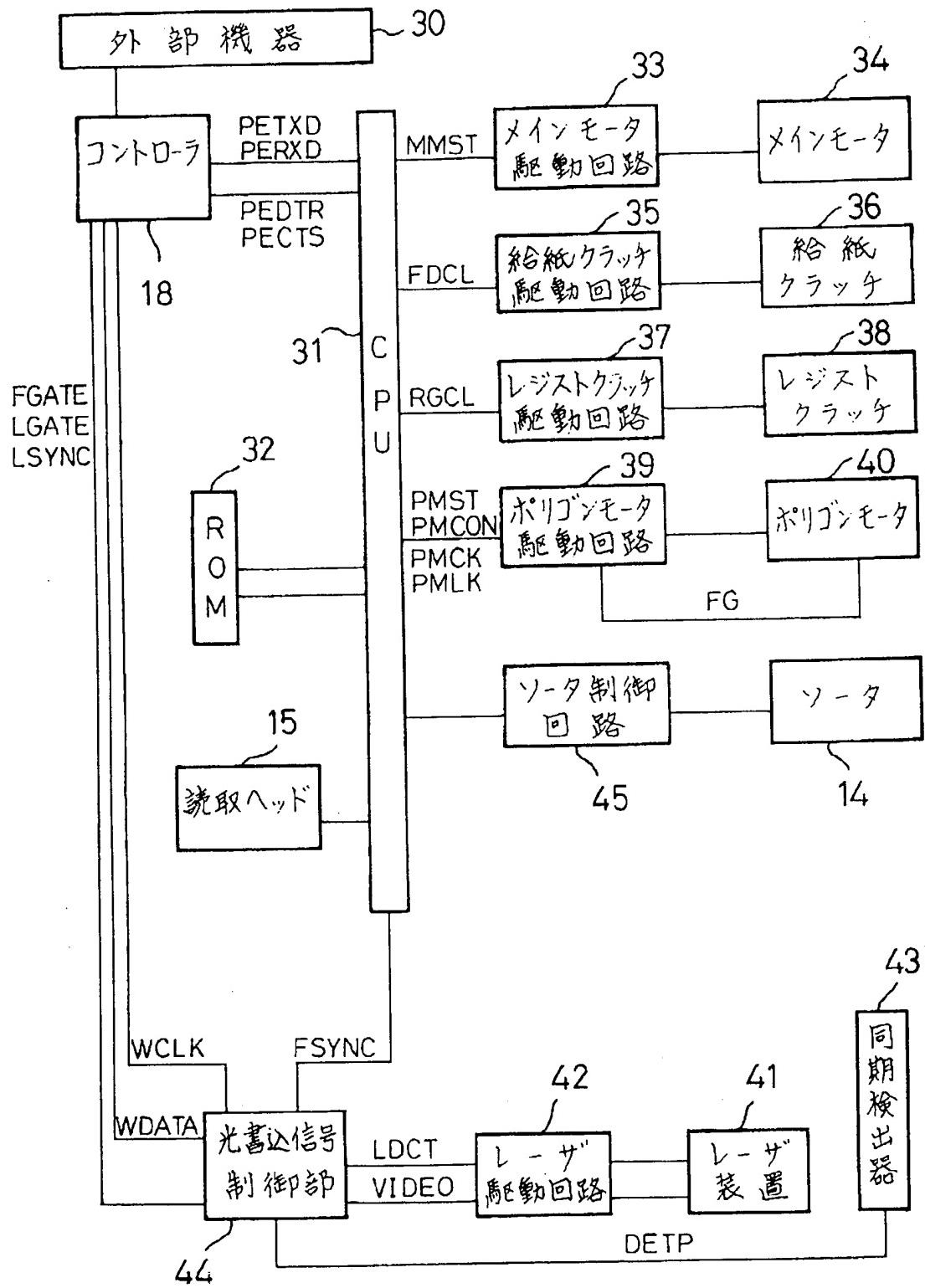


[Drawing 2]

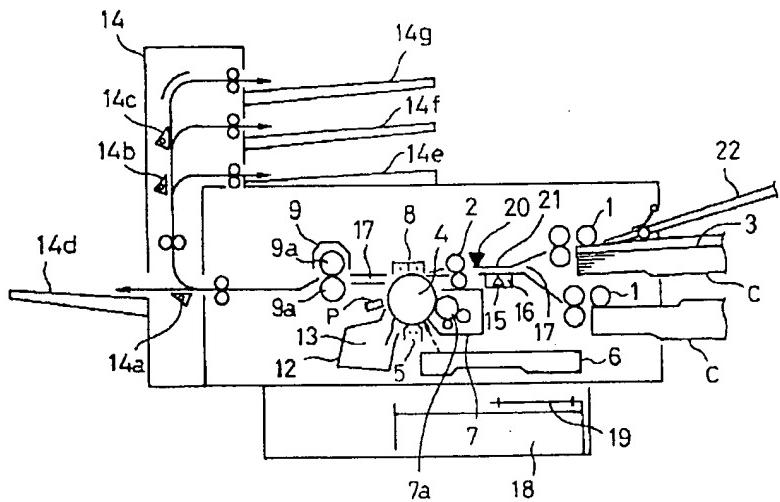
h

σ cσ h

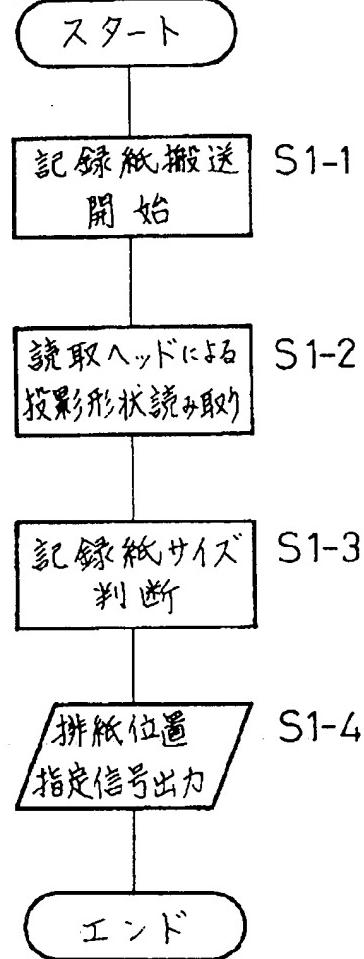
eh cg e e



[Drawing 3]

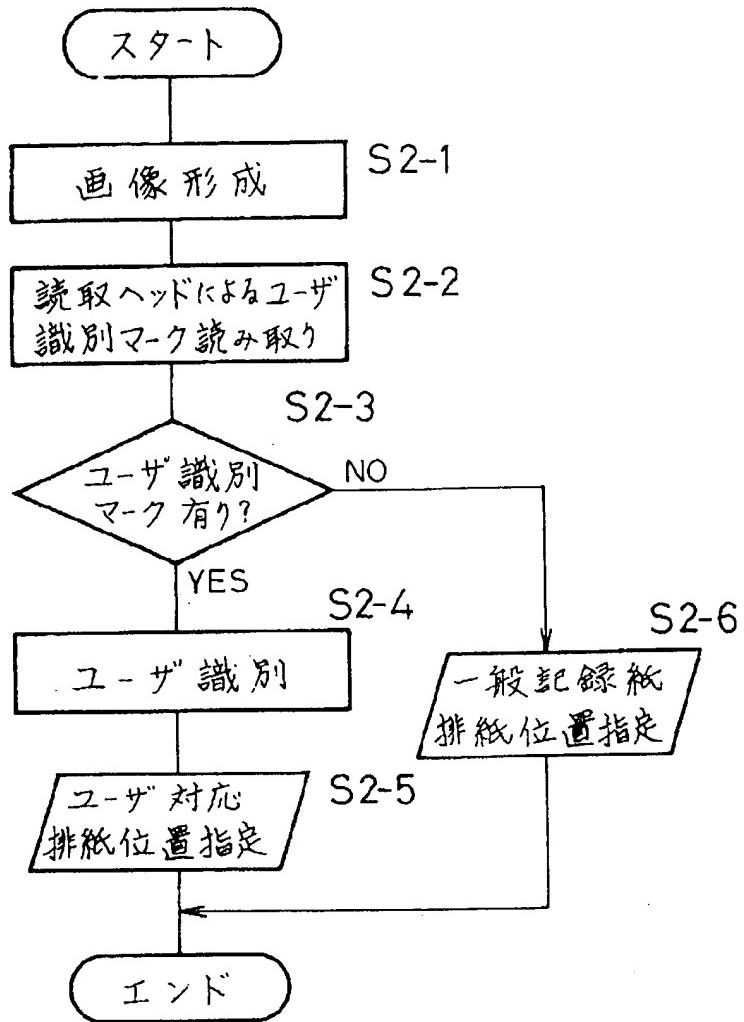


[Drawing 4]

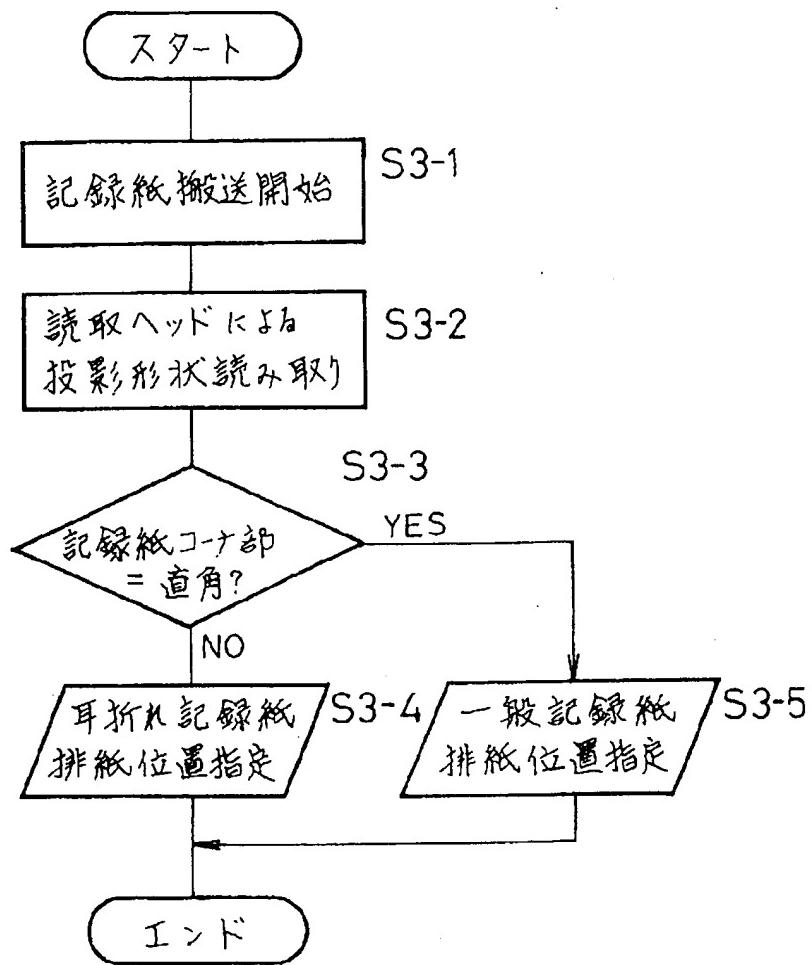


[Drawing 5]

h σ cσ h eb cg ee



[Drawing 6]

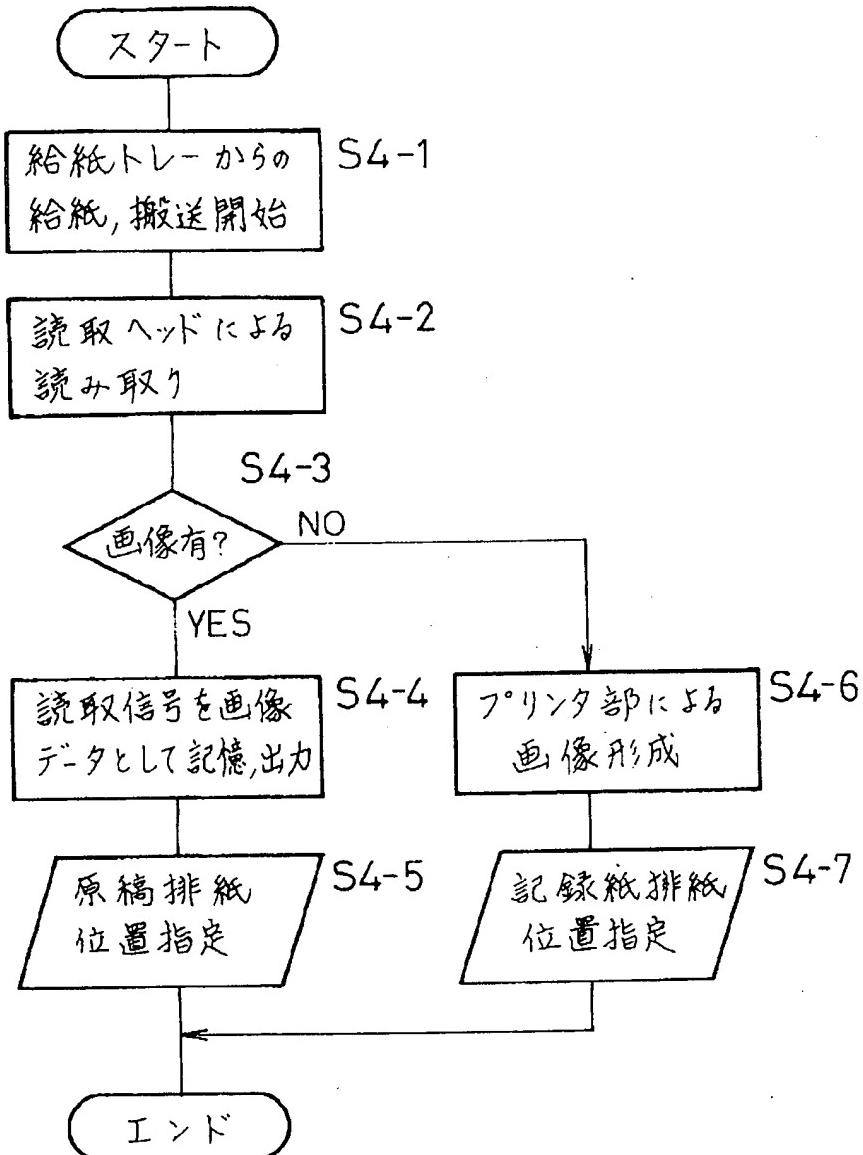


[Drawing 7]

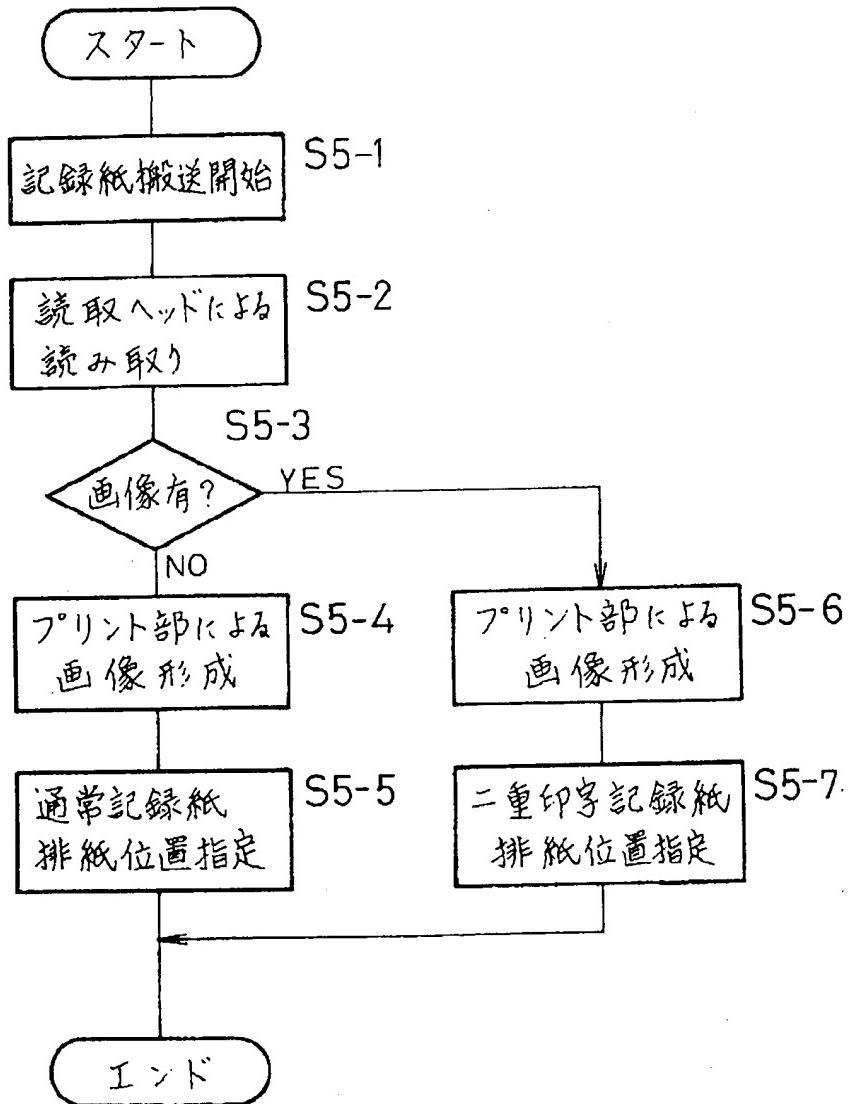
h

g cg b

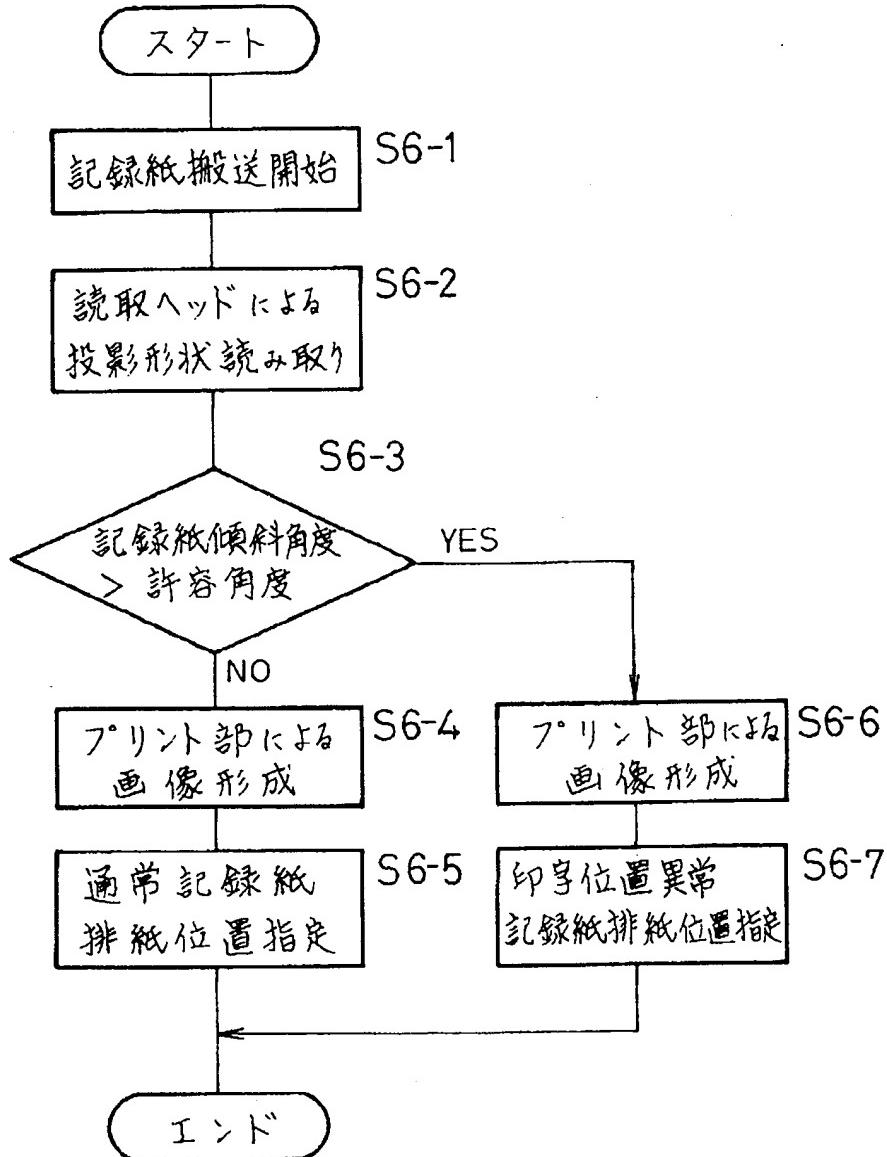
eb cg e e



[Drawing 8]



[Drawing 9]



[Translation done.]